

FORM PTO-1390
(REV 10-97)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

01090/TL

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

09/786962

INTERNATIONAL APPLICATION NO.
PCT/FR99/02095INTERNATIONAL FILING DATE
2 September 1999PRIORITY DATE CLAIMED
11 September 1998

TITLE OF INVENTION A METHOD OF TRANSMITTING DATA AND A CARD FOR SUCH TRANSMISSION

APPLICANT(S) FOR DO/EO/US Alain RHEIMI

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☒ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☒ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:
Form PCT/IB/308
Form PCT/IPEA/416
Form PCT/ISA/210
Form PTO/SB/122 (Change of Correspondence Address)
Assignment Information Letter for Publication

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Date of Deposit:

March 12, 2001

I hereby certify that this paper and any papers identified herein is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231

Yolanda Usher
Yolanda Usher

U.S. APPLICATION NO. 097786962 INTERNATIONAL APPLICATION NO. PCT/FR99/02095

ATTORNEY'S DOCKET NUMBER
01090/TL17. ☒ The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):

Search Report has been prepared by the EPO or JPO \$860.00

International preliminary examination fee paid to USPTO (37 CFR 1.482) \$690.00

No international preliminary examination fee paid to USPTO (37 CFR 1.482)
but international search fee paid to USPTO (37 CFR 1.445(a)(2)) \$750.00Neither international preliminary examination fee (37 CFR 1.482) nor
international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$1000.00International preliminary examination fee paid to USPTO (37 CFR 1.482)
and all claims satisfied provisions of PCT Article 33(2)-(4) \$100.00

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CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE
Total claims	13 - 20 =	0	\$ 18.00
Independent claims	2 - 3 =	0	\$ 80.00

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overpayment to Deposit Account No. 06-1378. A duplicate copy of this sheet is enclosed.NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR
1.137(a) or (b)) must be filed and granted to restore the application to pending status.

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Date: MARCH 12, 2001

SIGNATURE

THOMAS LANGER

NAME

27,264

REGISTRATION NUMBER

09/786962

JC02 Rec'd PCT/PTO 12 MAR 2001

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PTO/SB/122 (10-00)

Approved for use through 10/31/2002. OMB 0651-0035

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Application Number

Filing Date

First Named Inventor

Alain RHEIMI

Group Art Unit

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01090/TL

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Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).



Attorney or Agent of record.

Registered practitioner named in the application transmittal letter in an application without an executed oath or declaration. See 37 CFR 1.33(a)(1). Registration Number 27,264Typed or Printed
Name

Thomas Langer, Reg. No. 27,264

Signature

Thomas Langer

Date

March 12, 2001

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

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09/786962

JC02 Rec'd PCT/PTO 12 MAR 2001

Attorney Docket No. 01090/TL

**IN THE UNITED STATES PATENT
AND TRADEMARK OFFICE**

Applicant(s): Alain RHELIMI

Serial No. : Not yet assigned (U.S. Natl.
Phase of PCT/FR99/02095 filed
September 2, 1999)

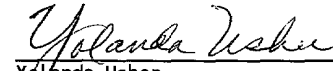
Filed : Concomitantly herewith

For : A METHOD OF TRANSMITTING DATA
AND A CARD FOR SUCH TRANSMISSION

Art Unit :
Examiner :

Express Mail Mailing Label
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Date of Deposit: March 12, 2001

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Yolanda Usher

PRELIMINARY AMENDMENT

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S I R :

Please amend the above-identified application as follows:

IN THE ABSTRACT

Replace the Abstract with the new Abstract appended hereto.

IN THE SPECIFICATION

Please insert the following as the first sentence of the
above-identified application:

--This application is a U.S. National Phase Application
under 35 USC 371 of International Application PCT/FR99/02095 (not
published in English) filed September 2, 1999.--

Page 1, before the paragraph starting on line 3, insert the following heading:

--FIELD OF THE INVENTION--

Page 1, before the paragraph starting on line 6, insert the following heading:

--BACKGROUND OF THE INVENTION--

Replace the paragraph spanning pages 2 and 3 with the following:

--OBJECTS AND SUMMARY OF THE INVENTION

The invention relates to a portable article of the smart card type, the article comprising firstly a body and secondly an integrated circuit chip, said integrated circuit chip having a central processor unit connected via a data and address bus to memories, and further including at least a first contact pad suitable for providing the chip with a power supply voltage, a second contact pad suitable for grounding the chip, a third contact pad and a fourth contact pad, said contact pads being electrically connected respectively to a first contact area, a second contact area, a third contact area, and a fourth contact area of a set of at least six contact areas flush with the surface of the article body, and one object of the invention is to enable such a portable article to operate in manners other than those specified by Part 3 of the 7816 standard, and in particular without using the T=0 and T=1 protocols and the formats required of data as described in that standard--.

Page 3, replace the paragraphs between lines 3 to 16 with the following:

--This and other objects are attained in accordance with one aspect of the invention which provides a portable article, characterized in that the third and fourth contacts pads connected to an interface of the chip constitute a differential pair and are suitable for providing both-way data transmission under the control of the central processor unit.

Another aspect of the invention also provides a method of transmitting data to an integrated circuit chip, which method is characterized in that the data handled by the central processor unit is transmitted in both directions via the third and fourth contact pads which constitute a differential pair and are connected to an interface of the chip.

BRIEF DESCRIPTION OF THE DRAWINGS--.

Page 4, replace the paragraph in lines 1-3 with the following:

--Figure 5 is a diagram that illustrates connecting a card to a connector of a reader.

DETAILED DESCRIPTION OF THE DRAWINGS--

Replace the paragraph in lines 24 to 33 with the following:

The chip 9 is a silicon die carrying integrated circuits of topology that defines various functional elements of the chip that are interconnected by the lines of a data and address bus 10. As shown diagrammatically in Figures 3 and 4, these

elements comprise in particular a central processor unit CPU, a volatile memory RAM, a non-volatile program memory ROM, an electrically erasable and programmable non-volatile memory EEPROM, and in accordance with the invention a special interface, in particular a USB interface. This is a differential-signal interface that is able to receive and transmit data in the form of differential signals. Further details about such signals and the interface are provided below.--

Page 8, replace the entire page with the following:

--via the USB interface only, and cards that can operate in both ways.

In a particularly advantageous embodiment shown diagrammatically in Figure 5, the connector of a reader for reading a card of the invention is made in such a manner that the connection sequence takes place mechanically as follows during card insertion: initially a connection is made to area C5, and then to areas C4 and C8, and finally connection is made to the area C1 to power the chip. This is advantageous because the IC receives a power supply voltage from the reader via C5 and C1 only after the areas C4 and C8 have received a defined voltage from the reader. This ensures that the signal inputs coupled to areas C4 and C8 already have defined voltages once the chip becomes active. This prevents malfunctioning of the chip which might otherwise occur if the chip were to receive a power supply voltage while the signal inputs coupled to areas C4 and C8 have

undefined voltages because they are not connected.

In other embodiments of the invention, six contact areas only of the card are used, for example contact areas C1, C1, C3, C5, C6 and C7 only. In such embodiments, the contact areas C1 and C5 are preferably connected to the pads VCC and GND of the chip. Any of the remaining contact areas may be connected to the pad D+ of the chip and any of the further remaining contact areas may be connected to the pad D-. It should be observed that, in all embodiments, making a connection between the pad VPP and the area C7 remains optional.--

IN THE CLAIMS

Please amend claims 3, 4 and 7-13 as follows:

3. (Amended) A portable article according to claim 1, characterized in that the third and fourth pads (D+, D-) constitute a differential pair, the potentials present on said pads being opposite to each other.

4. (Amended) A portable article according to claim 1, characterized in that the third and fourth pads (D+, D-) are suitable for transmitting data using protocols defined in the universal serial bus (USB) standard.

7. (Amended) A method according to claim 5, characterized in that the third and fourth contact pads (D+, D-) constitute a differential pair.

8. (Amended) A method according to claim 5, characterized in that data transmission via the third and fourth pads (D+, D-) takes place in both directions in alternation.

9. (Amended) A method according to claim 5, characterized in that to process data transmitted via the third and fourth contact pads (D+, D-), a clock is generated internally in the chip.

10. (Amended) A method according to claim 5, characterized in that data is transmitted via the third and fourth contact pads (D+, D-) using a synchronous communications protocol.

11. (Amended) A method according to claim 5, characterized in that data transmission is provided at rates going up to a value of about 12 megabits per second.

12. (Amended) A method according to claim 5, characterized in that data transmission is provided using protocols in compliance with the universal serial bus (USB) standard.

13. (Amended) A method according to claim 5, characterized in that in order to transmit data via the third and fourth pads (D+, D-), the portable article is connected to a connector of a reader (2) in such a manner that initially connection is made to the second contact area (C5), then connection to the third and fourth contact areas (C4, C8), and finally connection to the first contact area (C1).

13. (Amended) A method according to claim 5, characterized in that in order to transmit data via the third and fourth pads (D+, D-), the portable article is connected to a connector of a reader (2) in such a manner that initially connection is made to the second contact area (C5), then connection to the third and fourth contact areas (C4, C8), and finally connection to the first contact area (C1).

Respectfully submitted,



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ABSTRACT OF THE DISCLOSURE

A portable article of the smart card type and a method of transmitting data to such an article. The article comprises an article body and an integrated circuit chip. The integrated
5 circuit chip comprises a central processor unit (CPU) connected via a data and address bus to memories (ROM, RAM, EEPROM), and at least four contact pads (VCC, GND, RST, VPP, CLK, I/O, D+, D-) connected to four contact areas (C1, C5, C4, C8) of a set of at least six contact areas flush with the surface of the card body.
10 Two of the contacts pads (D+, D-) are connected to an interface of the card and are suitable for providing data transmission handled by the central processor unit (CPU) such as for transmitting data using the universal serial bus (USB) protocols and formats.

A METHOD OF TRANSMITTING DATA AND A CARD FOR SUCH
TRANSMISSION

The invention relates to portable articles of the
smart card type comprising firstly an article body and
5 secondly an integrated circuit chip.

Smart cards are standardized articles described in
particular in ISO standard 7816 and their main function
is to enable electronic transactions to be performed by
identifying the bearer. To this end, smart cards include
10 a chip whose circuits integrated on a silicon substrate
define various functional elements, and in particular a
central processor unit (CPU) and volatile memory (RAM),
non-volatile memory (ROM) and electrically erasable and
programmable non-volatile memory (EEPROM). The central
15 processor unit (CPU) manages data and addresses in the
various memories by means of a bus. In general, data and
addresses are respectively encoded on 8 bits and on
16 bits.

The integrated circuit chips are provided with six
20 contact pads: these pads being identified by the initials
VCC, GND, VPP, RST, CLK, and I/O, and serving
respectively to supply the chip with electricity, to
ground it, to supply it with a programming voltage, to
reset it, to input a clock signal, and to perform data
25 input and output. These pads are electrically connected
to contact areas that are flush with the surface of the
card. The VCC pad is connected to an area C1, the GND
pad to an area C5, the VPP pad to an area C6, the RST pad
to an area C2, the CLK pad to an area C3, and the I/O pad
30 to an area C7.

Part 2 of above-specified ISO standard 7816 relates
to the number, size, and positioning of the electric
contact areas on the card. Thus, as defined in that
standard, in addition to the areas C1, C5, C6, C2, C3,
35 and C7, the card also has two areas C4 and C8 that are
reserved for future use. No function has been allocated
to these areas which are not connected.

Part 3 of the 7816 standard relates to the various transmission protocols and signals that the card must comply with. In the protocols known as T=0 and T=1, data is transmitted solely via the I/O pad in half-duplex mode and asynchronously, using defined formats. The data rates authorized in those data formats and protocols are slow, of the order of 38 kilobits per second (kb/s) and multipoint links are not allowed.

As a result, when a state of the art card is to be used with a non-specialist terminal which does not make use of the above-specified protocols and formats of Part 3 of the 7816 standard, i.e. in fact most terminals available on the market, and in particular personal computers, it is necessary to use a card reader which serves not only to turn the card on and off, but also to perform protocol conversion and to reformat data so as to make it usable by the card. Since the data rates allowed for the card are slow, it cannot be used for applications that require fast transfer of data such as encoding/decoding information in real time.

Given the above, the invention relates to a portable article of the smart card type, the article comprising firstly a body and secondly an integrated circuit chip, said integrated circuit chip having a central processor unit connected via a data and address bus to memories, and further including at least a first contact pad suitable for providing the chip with a power supply voltage, a second contact pad suitable for grounding the chip, a third contact pad and a fourth contact pad, said contact pads being electrically connected respectively to a first contact area, a second contact area, a third contact area, and a fourth contact area of a set of at least six contact areas flush with the surface of the article body, and the problem which the invention seeks to resolve is that of enabling such a portable article to operate in manners other than those organized by Part 3 of the 7816 standard, and in particular without using the

T=0 and T=1 protocols and the formats required of data as described in that standard.

Given the above problem, the solution proposed by the invention firstly provides a portable article,
5 characterized in that the third and fourth contacts pads connected to an interface of the chip constitute a differential pair and are suitable for providing both-way data transmission under the control of the central processor unit.

10 The invention also provides a method of transmitting data to an integrated circuit chip, which method is characterized in that the data handled by the central processor unit is transmitted in both directions via the third and fourth contact pads which constitute a
15 differential pair and are connected to an interface of the chip.

The following description, which is not limiting in any way, serves to make it easier to understand how the invention can be implemented in practice. It should be
20 read with reference to the accompanying drawings, in which:

• Figure 1 is a diagram of a card of the invention inserted in a slot of a reader connected to a personal computer port via a hub;

25 • Figure 2 is a perspective view of a chip electrically connected to the contact areas of a smart card of the invention;

• Figure 3 shows the various elements of an integrated circuit chip of a card of the invention
30 connected to a card reader for transmitting data using the universal serial bus (USB) protocols;

• Figure 4 shows the various elements of an integrated circuit chip of a smart card of the invention connected to a card reader for transmitting data using
35 USB protocols and protocols from Part 3 of ISO standard 7816; and

• Figure 5 is a diagram illustrating the method of the invention for connecting a card to a connector of a reader.

5 The portable articles of the invention are of the smart card type.

As can be seen in Figure 1, portable articles of the smart card type 1 are for insertion in a slot of a reader 2, which reader 2 is connected via a connecting cable 3 to a hub 4, for example, said hub having at least one
10 port 5 in particular a USB type port, and being connected via a link cable 6 to a port 7, in particular a USB type port of a central unit 8.

Smart cards are standardized articles as defined in particular in ISO standards 7810, 7816, and 14443, and
15 the content thereof is incorporated in the present description by reference.

They are in the form of flat rectangular parallelepipeds having dimensions of about 85 millimeters (mm) in length, 54 mm in width, and 760 micrometers (μm)
20 in thickness, and they comprise a card body within which a chip 9 is integrated.

The card body comprises one or more thermoplastic or thermosetting layers.

The chip 9 is a silicon die carrying integrated
25 circuits of topology that defines various functional elements of the chip that are interconnected by the lines of a data and address bus 10. As shown diagrammatically in Figures 3 and 4, these elements comprise in particular a central processor unit CPU, a volatile memory RAM, a
30 non-volatile program memory ROM, an electrically erasable and programmable non-volatile memory EEPROM, and in accordance with the invention a special interface, in particular a USB interface.

The chip 9 has at least four contact pads: a first
35 contact pad VCC, a second contact pad GND, a third contact pad D+, and a fourth contact pad D-, said third and fourth contact pads D+ and D- being connected to the

USB interface. In addition, the chip 9 also optionally carries a fifth contact pad VPP, a sixth contact pad RST, a seventh contact pad CLK, and an eighth contact pad I/O.

As shown in Figure 2, the contact pads VCC, GND, D+, and D- are electrically connected respectively to a first contact area C1, a second contact area C5, a third contact area C4, and a fourth contact area C8 of a set of eight contact areas C1, C2, C3, C4, C5, C6, C7, and C8 that are flush with the surface of the card body. The contact pads VPP, RST, CLK, and I/O are optionally electrically connected respectively to a fifth contact area C6, a sixth contact area C2, a seventh contact area C3, and an eighth contact area C7 of the above-mentioned set.

Cards of the invention are suitable for communicating with the outside world, i.e. with a terminal such as a personal computer for example, by means solely of the contact pad VCC which provides the chip with a power supply voltage, the pad GND which grounds the chip, and the pads D+ and D- which provide both-way data transmission.

When data transmission is provided by the contact pads D+ and D-, the format of the data and the protocols used are those defined in the January 15, 1996 revision of Version 1.0 of the USB standard, and the content thereof or of subsequent USB standards is incorporated in the present description by reference.

In that standard, the pads D+ and D- constitute a differential pair, the potentials present on said pads being opposite to each other. When the potential of D+ is greater than the potential of D-, then a logic "1" is transmitted, and when the potential of D- is greater than the potential of D+, then a logic "0" is transmitted.

The USB interface of the card decodes the data transmitted by the pads D+ and D- and reformats it so that said data can be handled by the CPU.

Data transmission via the pads D+ and D- using the protocols defined in the USB standard provides numerous advantages.

5 Firstly, the rate at which data is transmitted can reach 12 megabits per second (Mb/s) which is well above the 38 kb/s rate for data transmitted via the I/O pad using the protocols and formats defined in ISO standard 7816.

10 Furthermore, data transmission takes place synchronously in half-duplex mode, i.e. in alternation, and although it is possible to transmit a clock signal via the pad CLK that is no longer necessary. In the invention, the clock is advantageously generated internally within the card, e.g. by means of a digital
15 phase-locked loop (DPLL). Depending on the transmitted data rate, 1.5 Mb/s at low speed and 12 Mb/s at high speed, the card itself determines its operating speed by means of pull-up resistors connected to the pads D+ or D-, and the DPLL locks so that the clock generated in
20 this way is compatible with the rate at which data is transmitted and so as to make it possible to decode the transmitted data frames. It is advantageous to use a frequency multiplier internal to the card.

25 Thus, the fraud that relies on analyzing electrical signatures becomes more difficult since such fraud requires external control of the clock via the CLK pad, and that is not permitted when data is transmitted via the D+ and D- pads.

30 It will be understood that these advantages enable a card of the invention to perform encrypting and decrypting operations in real time and at a high data rate, e.g. in pay TV applications or in other applications, in particular applications relating to encrypting information in a network.

35 It will be observed that in one embodiment of the invention, the cards can also operate using asynchronous protocols such as T=0 and T=1 as defined in Part 3 of ISO

standard 7816, in which case the I/O pad is used for inputting and outputting data signals, the RST pad for resetting the chip, the CLK pad for providing the chip with a clock signal, and optionally the VPP pad for
5 providing the chip with a programming voltage. Such cards could then be used with a state of the art reader, with the reader in turn performing USB/ISO data reformatting and protocol conversion.

It should also be observed that data transmission
10 using USB and ISO protocols can take place simultaneously with the CPU handling both data transmitted via the I/O pad and data transmitted by the D+ and D- pads.

In order to make use of the USB facilities of cards of the invention, readers of the kind shown
15 diagrammatically in Figures 3 and 4 include means for making connections at least to the areas C1, C5, C4, and C8 of the card, which areas are electrically connected to the pads VCC, GND, D+, and D- of the chip 9.

If, as in Figure 3, said readers 2 have means only
20 for making connection to the areas C1, C5, C4, and C8 of the card, then such readers 2 are no more than mere electrical connectors for transmitting data, power, and ground, thus considerably reducing the cost of such a reader.

25 In contrast, if said readers 2 are also to read cards in compliance with ISO standard 7816, then they must also have means for making connections to the areas C6, C3, C2, and C7 of the card which are electrically connected to the pads RST, VPP, I/O, and CLK of the chip
30 and they must be provided with an appropriate interface for converting data format and using protocols applicable to Part 3 of ISO standard 7816. USB or ISO 7816-3 operating mode is then selected either mechanically or electrically. Such readers can then be used to read a
35 variety of dissimilar cards: cards that operate in compliance with the ISO standard only, cards that operate

via the USB interface only, and cards that can operate in both ways.

In a particularly advantageous embodiment shown diagrammatically in Figure 5, the connector of a reader for reading a card of the invention is made in such a manner that the connection sequence takes place mechanically as follows during card insertion: initially a connection is made to area C5, and then to areas C4 and C8, and finally connection is made to the area C1 to power the chip.

In another embodiment of the invention, six contact areas only of the card are used. In USB mode these areas are respectively the areas C1, C5, C3, and C7 which are respectively connected to the pads VCC, GND, CLK, and I/O of the chip. In ISO mode, the areas are respectively the areas C1, C5, C2, C6, C3, and C7 which are respectively connected to the pads VCC, GND, RST, VPP, CLK, and I/O. Also, in the invention, the contact pads VCC, GND, D+, and D- are electrically connected respectively to a first contact area C1, a second contact area C5, a third contact area C3, and a fourth contact area C7 of a set of at least six contact areas C1, C2, C3, C5, C6, and C7. It should be observed that in all embodiments making a connection between the pad VPP and the area C7 remains optional.

CLAIMS

1/ A portable article of the smart card type, the article comprising firstly a body and secondly an integrated circuit chip (9), said integrated circuit chip (9) having
 5 a central processor unit (CPU) connected via a data and address bus to memories (ROM, RAM, EEPROM), and further including at least a first contact pad (VCC) suitable for providing the chip (9) with a power supply voltage, a second contact pad (GND) suitable for grounding the chip
 10 (9), a third contact pad (D+) and a fourth contact pad (D-), said contact pads (VCC, GND, D+, D-) being electrically connected respectively to a first contact area (C1), a second contact area (C5), a third contact area (C4), and a fourth contact area (C8) of a set of
 15 eight contact areas (C1, C2, C3, C4, C5, C6, C7, C8) flush with the surface of the article body, said portable article being characterized in that the third and fourth contacts pads (D+, D-) are connected to an interface of the chip (9) and are suitable for providing data
 20 transmission under the control of the central processor unit (CPU).

2/ A portable article according to claim 1, characterized in that the chip (9) further includes a fifth contact pad
 25 (VPP), a sixth contact pad (RST) suitable for resetting the chip (9), a seventh contact pad (CLK) suitable for providing the chip with a clock signal, and an eighth contact pad (I/O) suitable for inputting and outputting data signals using an asynchronous protocol, said sixth,
 30 seventh, and eighth contact pads (RST, CLK, I/O) being connected electrically respectively to a sixth contact area (C2), a seventh contact area (C3), and an eighth contact area (C7) of the set of eight contact areas flush with the surface of the article body.

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3/ A portable article according to claim 1 or 2, characterized in that the third and fourth pads (D+, D-)

constitute a differential pair, the potentials present on said pads being opposite to each other.

- 4/ A portable article according to any one of claims 1, 2, or 3, characterized in that the third and fourth pads (D+, D-) are suitable for transmitting data using protocols defined in the universal serial bus (USB) standard.
- 5/ A method of transmitting data to an integrated circuit chip (9) of a portable article of the smart card type including an article body, said integrated circuit chip (9) comprising a central processor unit (CPU) connected via a data and address bus to memories (ROM, RAM, EEPROM) and further comprising at least a first contact pad (VCC) suitable for providing the chip with a power supply voltage, a second contact pad (GND) suitable for grounding the chip (9), a third contact pad (D+) and a fourth contact pad (D-), said contact pads (VCC, GND, D+, D-) being electrically connected respectively to a first contact area (C1), a second contact area (C5), a third contact area (C4), and a fourth contact area (C8) of a set of eight contact areas (C1, C2, C3, C4, C5, C6, C7, C8) flush with the surface of the article body, said method being characterized in that the data handled by the central processor unit (CPU) is transmitted via the third and fourth contact pads (D+, D-) connected to an interface of the chip (9).
- 6/ A method according to claim 5, characterized in that a fifth contact pad (VPP), a sixth contact pad (RST) resets the chip (9), a seventh contact pad (CLK) provides the chip (9) with a clock signal, and an eighth contact pad (I/O) provides data signal input and output using an asynchronous protocol, said sixth, seventh, and eighth contact pads (RST, CLK, I/O) being electrically connected respectively to a sixth contact area (C2), a seventh

contact area (C3), and an eighth contact area (C7) of the set of eight contact areas flush with the surface of the card body.

- 5 7/ A method according to claim 5 or 6, characterized in that the third and fourth contact pads (D+, D-) constitute a differential pair.

- 8/ A method according to any one of claims 5, 6, or 7,
10 characterized in that data transmission via the third and fourth pads (D+, D-) takes place in both directions in alternation.

- 9/ A method according to any one of claims 5 to 8,
15 characterized in that to process data transmitted via the third and fourth contact pads (D+, D-), a clock is generated internally in the chip.

- 10/ A method according to any one of claims 5 to 9,
20 characterized in that data is transmitted via the third and fourth contact pads (D+, D-) using a synchronous communications protocol.

- 11/ A method according to any one of claims 5 to 10,
25 characterized in that data transmission is provided at rates going up to a value of about 12 megabits per second.

- 12/ A method according to any one of claims 5 to 12,
30 characterized in that data transmission is provided using protocols in compliance with the universal serial bus (USB) standard.

- 13/ A method according to any one of claims 5 to 12,
35 characterized in that in order to transmit data via the third and fourth pads (D+, D-), the portable article is connected to a connector of a reader (2) in such a manner

that initially connection is made to the second contact area (C5), then connection to the third and fourth contact areas (C4, C8), and finally connection to the first contact area (C1).

A B S T R A C T

A METHOD OF TRANSMITTING DATA AND A CARD FOR SUCH TRANSMISSION

5

The invention relates to a portable article of the smart card type and to a method of transmitting data to such an article, the article comprising firstly an article body and secondly an integrated circuit chip, said integrated circuit chip comprising a central processor unit (CPU) connected via a data and address bus to memories (ROM, RAM, EEPROM), and further comprising at least four contact pads (VCC, GND, RST, VPP, CLK, I/O, D+, D-) connected to four contact areas (C1, C5, C4, C8) of a set of at least six contact areas flush with the surface of the card body. The invention is characterized in that two of the contacts pads (D+, D-) are connected to an interface of the card and are suitable for providing data transmission handled by the central processor unit (CPU). The invention applies in particular to transmitting data using the universal serial bus (USB) protocols and formats.

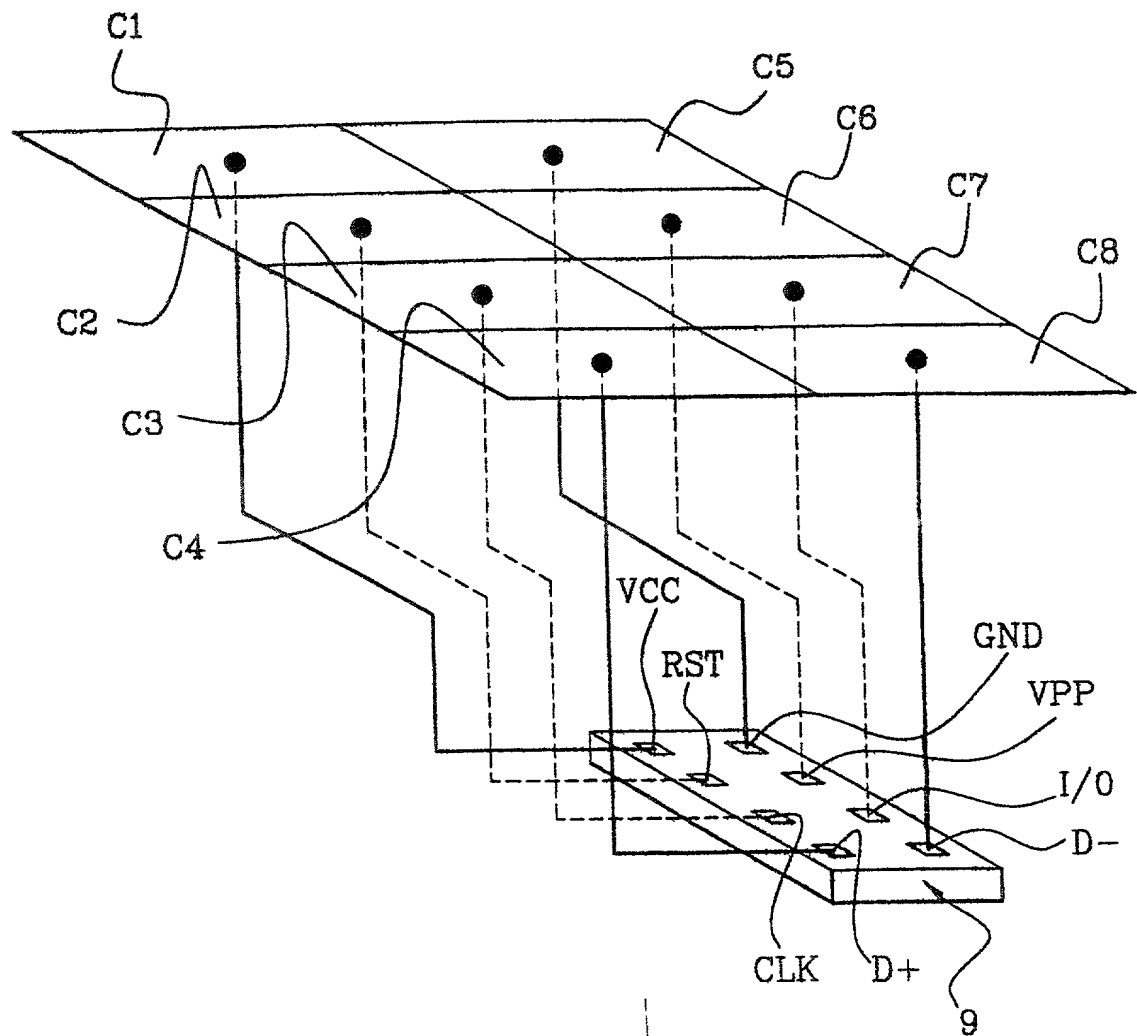
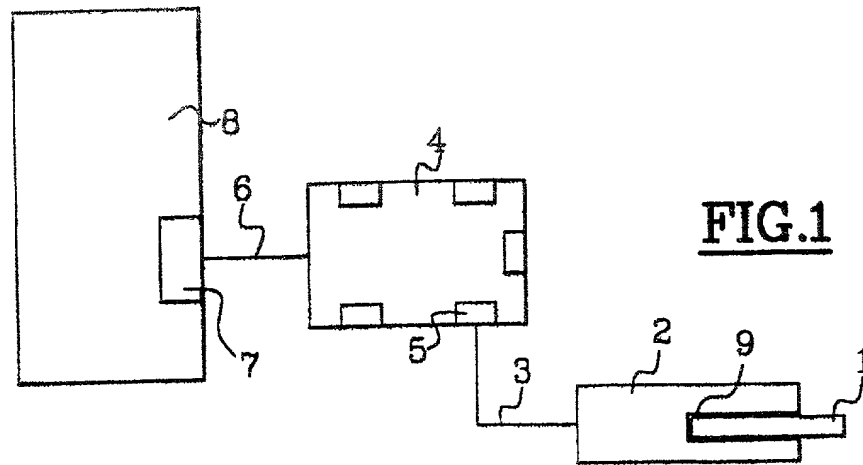
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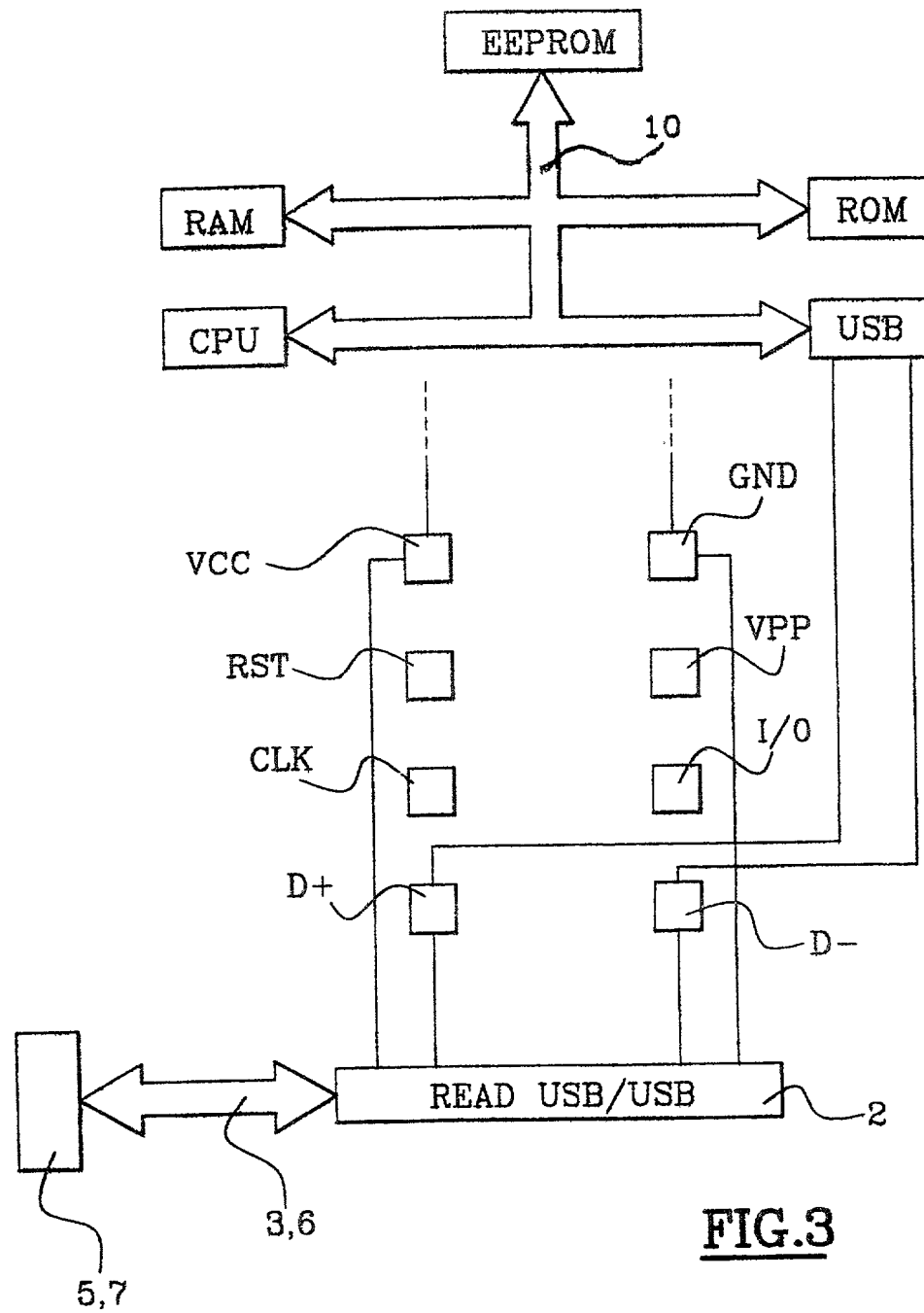
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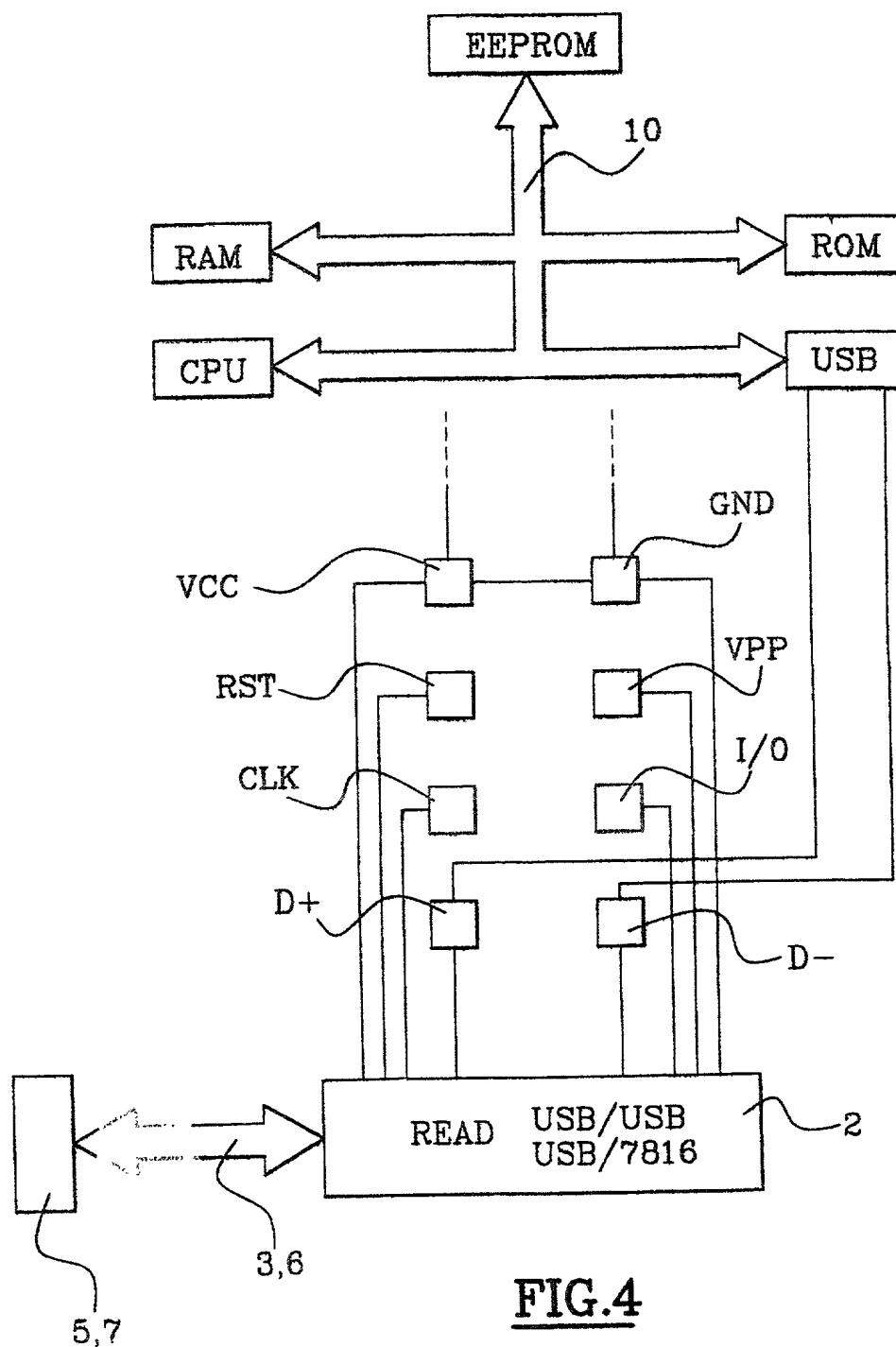
Translation of the title and the abstract as they were when originally filed by the Applicant. No account has been taken of any changes that may have been made subsequently by the PCT Authorities acting ex officio, e.g. under PCT Rules 37.2, 38.2, and/or 48.3.

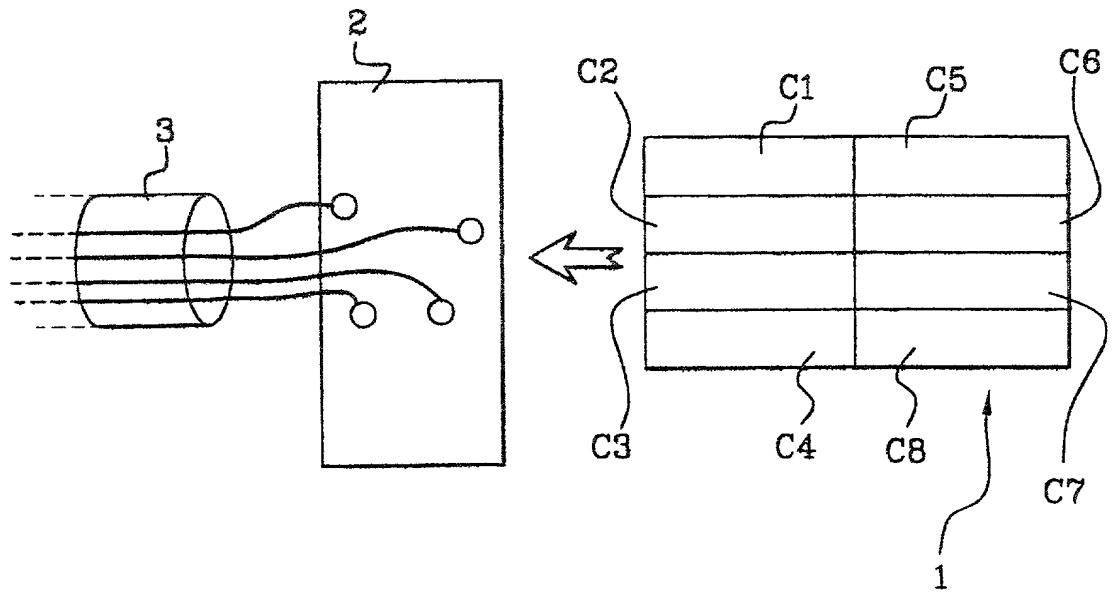
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1/4

FIG.2





**FIG.5**



APPLICATION FOR UNITED STATES LETTERS PATENT
POST FILED PCT Declaration and Power of Attorney (35 U.S.C. 371(c)(4))
PCT Application - United States Designated Office

As a below named inventor, I declare that:

My residence, post office address and citizenship are as stated below next to my name; I believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

A METHOD OF TRANSMITTING DATA AND A CARD FOR SUCH A TRANSMISSION

described and claimed in serial number **09/786,962** deposited **March 12, 2001** which is the National Phase application of International Application No. **PCT/FR99/02095** filed **2 September 1999**

I have reviewed and understand the contents of said specification, including claims.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR §1.56.

I claim priority benefits under 35 USC §119 of: (i) any foreign application(s) for patent or inventor's certificate listed below; or (ii) any United States provisional application(s) listed below; and have also identified below any foreign application(s) for patent or inventor's certificate, or PCT international application having a filing date before that of the application(s) on which priority is claimed.

COUNTRY	APPLICATION NUMBER	DATE (day, month, year)	PRIORITY CLAIMED
France	98 11374	09/11/1998	yes <u>X</u> no _____
			yes _____ no _____

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I appoint the following attorneys to prosecute this application and to transact all business in the U.S. Patent & Trademark Office connected therewith: Leonard Holtz, Reg. No. 22,974; Herbert Goodman, Reg. No. 17,081; Thomas Langer, Reg. No. 27,264; Marshall J. Chick, Reg. No. 26,853; Richard S. Barth, Reg. No. 28,180; Douglas Holtz, Reg. No. 33,902; and Robert P. Michal, Reg. No. 35,614.

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